Allied Paper Inc. Property/Bryant Mill Pond Area

The Allied Paper Landfill (Operable Unit 1 or OU-1) is part of the Allied Paper/Portage Creek/Kalamazoo River Superfund site(Site). Operable Unit (OU) is a term used to describe ~~for each of a number of separate cleanup activities taking place as part of a Superfund site cleanup or~~ distinct areas within a Superfund site. ~~At this site,~~ EPA has split up this Site into several OUs including the five disposal areas, five paper mill properties, and the Kalamazoo River, ~~into separate Operable Units~~. The Kalamazoo River OU (OU5) includes an 80-mile stretch of the Kalamazoo River from Morrow Dam to Lake Michigan, and a three-mile stretch of Portage Creek. Allied Landfill (OU1) occupies 89 acres including Portage Creek between Cork and Alcott streets in the city of Kalamazoo.

Site Contamination

Michigan Department of Environmental Quality conducted the remedial investigation (RI) for Allied Landfill. The RI, which is a study of the nature and extent of contamination, focused on polychlorinated biphenyls (PCBs).

Paper-making residuals (residuals) were the primary waste ~~product~~ generated during the paper recycling process at the mills. PCBs have been detected in the residuals at OU1. These residuals, which are primarily a mixture of clay and wood fiber, often appear at the site as deposits of gray clay. As with most clays, the residuals have low permeability when compacted. The visual appearance of residuals is distinctive, and thus a goal of some past excavation activities has been to remove all the gray clay residuals. PCBs were introduced to the OU through the recycling of carbonless copy paper that contained PCBs as a carrier for the ink. Carbonless copy paper contained PCBs between 1957 and 1971, and PCBs were in the recycle stream after that period as the carbonless copy paper supply was depleted. The key risk management goals established for OU1 are associated primarily with exposure to PCBs in the various media.**Update**

EPA has just released a document called a feasibility study (FS) that details different cleanup options for the landfill. The options in the FS include consolidation and covering/ ~~or~~ capping the landfill, ~~or~~ digging up the contaminated soil and shipping it to a licensed landfill for disposal and an encapsulation containment system. ~~These are two of six basic options in the feasibility study.~~ The FSeasibility also details groundwater control components that could be added to the different alternatives.

Commented [JC1]: Should parallel description in the FS fact sheet

This web site has been created to share information and respond to your questions and concerns. Please link to bulleted topics for more information.

If you have specific questions or concerns you are welcome to contact either Patricia Krause or Michael Berkoff who are listed on the right side of the page.

Ground Water

The City of Kalamazoo has raised concerns that contamination from Allied Landfill could migrate to the City's well field and affect drinking water. In 2009, a study done by Millennium Holdings (then the owner and a responsible party for the cleanup of Allied Landfill) evaluated whether a pathway existed where the ground water would flow from the Allied Landfill to the City's Central Well Field. The study concluded ~~conclusion was~~ that a ground water migration pathway from Allied Landfill to the City's Central Well Field is highly unlikely. EPA and MDEQ haves determined that ground water at Allied Landfill flows towards Portage Creek and not towards the City of Kalamazoo's Central Well Field. Additionally, the low levels of contamination observed in the groundwater within the landfill are not even reaching Portage Creek, as evidenced by the groundwater data. EPA has concluded that the groundwater at Allied Landfill does not pose a risk outside of the waste.

Some of the specific findings of the study were that:

- Groundwater is not flowing towards the City's Central Well Field.
- Shallow ground water flow is to the east and not northwest toward the City's Central Well Field. Shallow ground water from adjacent properties flows to the east and west onto Allied Landfill.
- Portage Creek is the point of discharge for shallow ground water from Allied Landfill further directing ground water away from the Central Well Field.
- All available data suggests that a flow path from Allied Landfill towards the city's Central Well Field is unlikely, as regional groundwater flow is from the deeper to the shallow aquifer and a partially impermeable rock layer separates the shallow and deep aquifer.
- Transport of PCBs in the ground water is limited. PCBs were detected in 3 of 56 monitoring well locations. The wells with detections were within or right next to the residuals.
- The land surface of Allied Landfill generally slopes toward Portage Creek (valley) which is why water (surface and ground) from Allied Landfill discharges to Portage Creek.

Nature of Contamination at Allied Landfill

The nature of PCBs is that they are generally immobile, meaning that they don't move. PCBs are chemically and thermally stable so they will not change or decompose, have low solubility so they do not dissolve in water and will strongly adhere to solids. So in the case of Allied Landfill, PCBs adhere to the residuals due to their high organic content. Chemicals with lower water solubilities are more likely to be absorbed onto solids. PCBs readily absorb to organic material

such as sediment and soil. PCBs at Allied Landfill do not readily migrate out of the paper residuals. Currently the remaining potential sources of PCBs to Portage Creek from Allied Landfill are associated with erosion of contaminated soil and sediment.

Early investigative efforts recognized that if the full extent of PCBs were identified and appropriately remediated, then other associated substances at Allied Landfill would be appropriately addressed. The RI therefore focused on PCBs for identifying the extent of contamination. In addition to PCBs, several inorganics, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) were detected in soils, sediments, and groundwater.

Risks Posed by Allied Landfill

The risks posed by Allied Landfill to people's health through PCB exposure come from direct contact with contamination at Allied Landfill or consumption of PCB contaminated material that originated at Allied Landfill. Specifically, Allied Landfill poses an on-site risk, from direct contact with PCB contaminated materials to construction/utility workers and inhaling dust and emissions from PCB contaminated materials. There is a limited number of commercial/industrial and residential properties which contain contaminated paper residuals from the operations at Allied Landfill. At these properties, there is also a risk of direct contact exposure. The PCB contamination at these properties is currently below protective barriers of clean soil or parking lots, preventing present exposure so long as those barriers are in place. The risk of consumption, associated with Allied Landfill, comes from local anglers eating fish which ~~a~~are contaminated with PCBs. ~~Since~~ The Bryant Mill Pond removal action, ~~which~~ removed 150,000 cubic yards of waste from Portage Creek, adjacent to Allied Landfill, from 1998-1999. Since ____ PCB fish concentrations have dropped an order of magnitude in ____.

Commented [JC2]: From when to when and where have fish concentrations dropped??

Capping

The FS includes capping options for the Allied Landfill. Capping involves placing a protective cover over contaminated material such as landfill waste or contaminated soil. ~~These covers are called "caps," made up of multiple layers and usually at least a couple feet thick.~~ Caps do not destroy or remove contaminants. Instead, they isolate the contaminants to keep them in place to prevent the spread of contamination from erosion. Caps also prevent people and wildlife from coming into direct contact with contaminants. Caps also help prevent the leaching of contamination into groundwater by, stopping rain and snow from seeping through the material and carrying contaminants to the ground water. Caps prevent wind from blowing contaminated material off site.

The design of the cap for a site depends on several factors: the types and concentrations of contaminants, size of the site, amount of rainfall the area receives, and future use of the property. ~~A cap for the Allied Landfill property would require several layers. From top to bottom it would~~

~~include a vegetative layer, drainage layer, flexible plastic membrane liner, a gas venting layer and a non-woven geotextile layer. Caps, when properly maintained, can be effective in perpetuity.~~

Commented [JC3]: This seems to vary from the option in the FS – also sounds like preselection .

Each of the capping alternatives include ~~As a part of a capping remedy,~~ ground water monitoring wells ~~are~~ placed around the capped area and sampled routinely to make sure the contamination is contained.

~~Superfund law directs~~ The National Contingency Plan and EPA guidance state that EPA expects to use engineered barriers like caps to prevent exposure to ~~large volumes of immobile or~~ low level threat wastes, such as large volumes of immobile waste. Caps have been selected for use at many Superfund sites across the country. Also capping remedies with groundwater monitoring have been put in place at King Highway (OU3), 12th Street (OU4) and the Willow Boulevard/A-Site (OU2) Landfills in Michigan. All of these landfills have ~~similar~~ PCB contaminated residuals, and the remedies are operating successfully.

Digging up and Disposing Off-site (or Excavation and Off-Site Disposal)

The FS also includes a "total removal option" for the Allied Landfill. The first step in a total removal remedy is to identify the exact limits of the contaminated areas at the site. To conduct the excavation, standard construction equipment like backhoes would be used. The exact equipment chosen is based on how large and deep the contaminated area is and whether access is limited because of the presence of buildings or other structures. Excavated soil would be placed in roll-off containers and transported off-site to a licensed landfill that can accept the waste. Excavation is complete when the remaining soil around the excavated area meets established cleanup levels. Clean soil from other locations may be needed to fill in the area as well. Any excavation would require extensive safety precautions, to prevent a release of contamination to Portage Creek or as dust emissions. Excavation around buildings is a bit more involved as precautions are needed so that foundations are not damaged.

Excavating contaminated soil may take several years and depends on several factors like how large and deep is the contaminated area and the available funding for the cleanup. Since EPA estimates that there is approximately 1.5 million cubic yards of contaminated material at Allied Landfill, total removal ~~c~~would take approximately 5 years with 100% funding of the cleanup. That translates to more than XXX,XXX truck loads traveling XXX miles. This activity requires local traffic safety precautions as well as causing community disruption. In that 5 year scenario, there would be an average of 40 truck trips per day, year-round.

Commented [JC4]: Was this calculation in the FS?? Or otherwise in the administrative record?

~~Excavation is usually used where in-place cleanup methods will not work quickly enough or the in-place cleanup method is too expensive, or the nature of the waste material is such that it cannot be contained.~~

Commented [JC5]: Can you point me to guidance on this? thanks

Cost for Cleanup Options

The FS EPA estimates that the cost for the a consolidation, capping and monitoring option at OU1 the site could cost around $41 million. EPA estimated that the option for total removal of waste could cost $189 million.

Paying for Cleanup

Allied Landfill's former owner, Millenium Hholdings, established a $50.5 million trust for cleanup of Allied Landfill as a part of a their bankruptcy settlement in 2010. If Any funding is required beyond that trust account, a potential source may be would have to come from the EPA Superfund account for such projects. Nationwide , funding for such projects has been significantly reduced over the last 5 years. The Allied Landfill project would have to complete with other sites, nationally for funding from the EPA Superfund account. , many of which represent imminent threats to human health and the environment. Further, there currently is a backlog of cleanup sites nationwide awaiting such funding. There is no guarantee when Allied Landfill would obtain funding. Any funding would come in small increments and be subject to postponement for other future higher priority projects.

Commented [JC6]: I would prefer not to include this section on the web page – since it hampers enforcement efforts against other responsible parties. If you need to say something – I suggest being more general – per my edits.

What are PCBs? (place on right side or in separate box)

PCB s are a family of man-made chemicals that contain 209 individual compounds with different toxicity. PCBs were used widely as coolants and lubricants in transformers and other electrical equipment. Manufacturing of PCBs stopped in 1977 because of evidence that PCBs accumulate in the environment and may cause a health hazard.

Technical Documents

2009 Supplemental Ground Water Study which will also be available in the feasibility study

Sitewide Human Health Risk Assessment and Baseliine Ecological Risk Assessment